

ABSTRACT

The present invention provides a series of devices useful for surgical procedures utilizing rotatable components for grinding, cutting, ablating, polishing, drilling, screwing, etc., tissues of the body of a patient. The invention includes, in one aspect, a series of devices comprising surgical instruments including rotatable shafts, and surgical components drivable by the shafts that can be utilized for contact with tissue in a surgical operating field. Some preferred surgical instruments provided by the invention utilize a liquid jet-driven rotor mechanism for driving rotation of the rotatable shaft. Some preferred instruments provided by the invention include both a liquid jet-driven rotor mechanism and a nozzle at the distal end of the instrument for forming a liquid cutting jet for cutting or ablating tissue of a patient. Such instruments can include a liquid flow directing valve therein that includes a pressure-tight sealing component comprising a sealing element that is constructed and arranged to be slidably moveable within a cylinder of the valve. The invention provides methods for utilizing the inventive surgical instruments in surgical procedures involving both cutting or ablating tissue of a patient with a liquid cutting jet and grinding, cutting, or ablating tissue with a rotating surface of a surgical instrument.